FBXEM01 Specification

Energy meter

[May 2013]

FORBIX SEMICON

FORBIX SEMICON
Bangalore, India

Please feel free to give feedback through: ***sales@forbixindia.com***

NOTICE

FORBIX SEMICON reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to FORBIX SEMICON's terms and conditions of sale supplied at the time of order acknowledgment. Information contained in this publication regarding device applications is provided only for customer's convenience and may be superseded by updates. It is solely customer's responsibility to ensure that the application meets the desired specifications. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

FORBIX SEMICON MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE.

FORBIX SEMICON does not warrant or represent that any license, either express or implied, is granted under any FORBIX SEMICON copyright, mask work right, or other FORBIX SEMICON's intellectual property right relating to any combination, machine, or process in which FORBIX SEMICON products or services are used. Information published by FORBIX SEMICON regarding third-party products or services does not constitute a license from FORBIX SEMICON to use such products or services or a warranty or endorsement thereof.

Reproduction of FORBIX SEMICON information in FORBIX SEMICON data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. FORBIX SEMICON is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

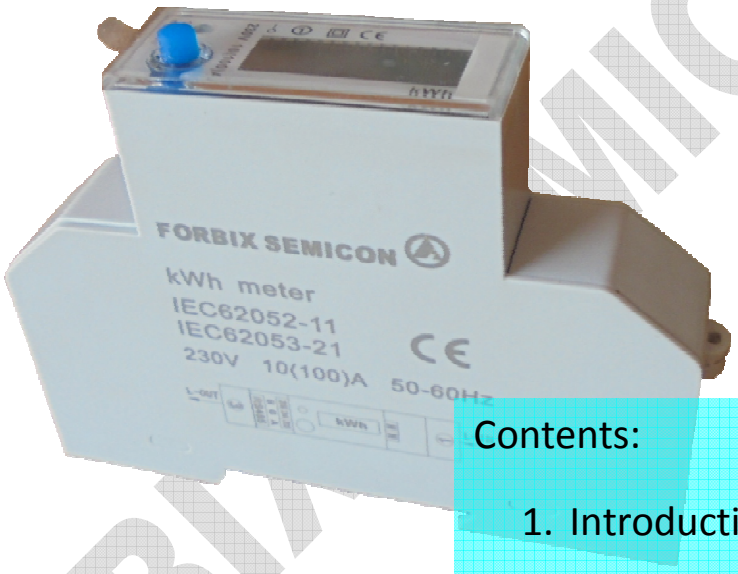
Resale of FORBIX SEMICON products or services with statements different from or beyond the parameters stated by FORBIX SEMICON for that product or service voids all express and any implied warranties for the associated FORBIX SEMICON product or service and is an unfair and deceptive business practice. FORBIX SEMICON is not responsible or liable for any such statements.

FORBIX SEMICON products are not authorized for use in safety-critical applications (such as life support) where a failure of the FORBIX SEMICON product would reasonably be expected to cause severe personal injury or death. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of FORBIX SEMICON products in such safety-critical applications. Further, Buyers must fully indemnify FORBIX SEMICON and its representatives against any damages arising out of the use of FORBIX SEMICON products in such safety-critical applications.

FORBIX SEMICON products are neither designed nor intended for use in military/aerospace applications. Buyers acknowledge and agree that any such use of FORBIX SEMICON products is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

FORBIX SEMICON

FBXEM01: Single Phase, Two Wire Energy Meter



FORBIX SEMICON

Contents:

1. Introduction
2. Features and Technical parameters
3. Description
4. Display
5. Connection diagram
6. Meter Dimensions
7. Safety Instructions
8. Document History

1. Introduction

FBXEM01 is a small sized multifunction Automatic Meter Reading (AMR) module. It has a standard installation with DIN EN 50022, along with RS485 protocol interface to read internal register data. This is a suitable solution for solution for residential and commercial installations.

2. Features and Technical parameters

2.1 Features

- Any external agent, (a micro-controller or computer based system), can read the data via RS485 interface and take necessary action
- DIN RAIL standard installation
- Can measure up to 100 Amperes
- FBXEM01 module is just 18mm wide (similar to the size of MCB mini-circuit-breaker), takes less space on Din rail mounted cabinets / enclosures
- Protocol: RS485 communication (with command and response based message system, as per FORBIX SEMICON product nomenclature
- Blue LCD backlight allows the meter to be read in low light conditions.
- Display current and voltage.
- Accurately measure forward and reverse energy.
- Reactive energy can be measured.
- The data can be read / displayed through 2methods:
    1. Read data on command basis (on RS485 protocol)
    2. Check data through the external button (read on LCD)
- Material of Meter housing: ABS fire resistant.
- Degree of Protection: IP51 (indoor meter).
- *Optional – Multi-tariff function. The user can set time period through RS485 communication, and then the meter will measure the energy of each different time period*
- *Optional – Meter has 3.6V Lithium battery, which is used to support multi-tariff function. And the precision of RTC is better than 0.5s/day*

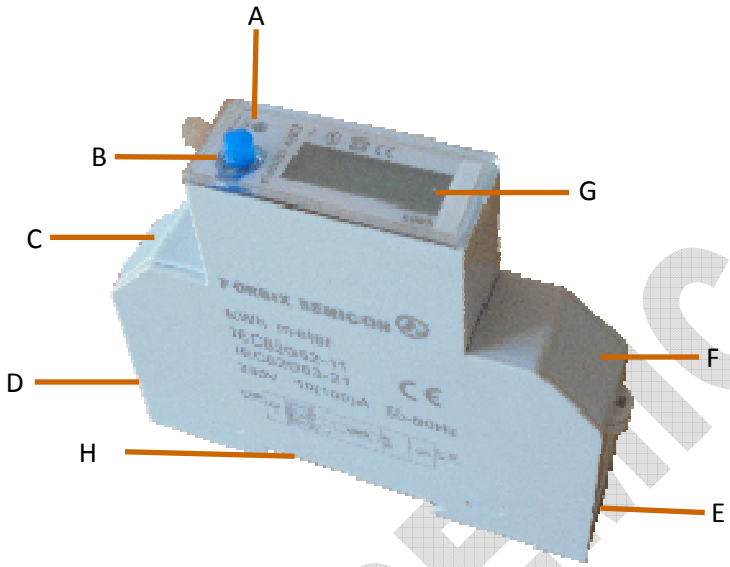
FORBIX SEMICON

2.2 Technical parameters

Voltage:	230V
Current:	10(100) A
Accuracy class:	1.0
Standard:	IEC62052-11, IEC62053-21
Frequency:	50-60Hz
Impulse constant:	1000imp/kWh
Display:	LCD 5+1 = 99999.9kW
Power consumption:	≤8VA ≤0.4Wh
Starting current:	0.004Ib
Temperature range:	-20～65℃
Flashing red:	Impulse indication, width=90ms
Average humidity value of year:	75%
Maximal value:	95%

FORBIX SEMICON

3. Description

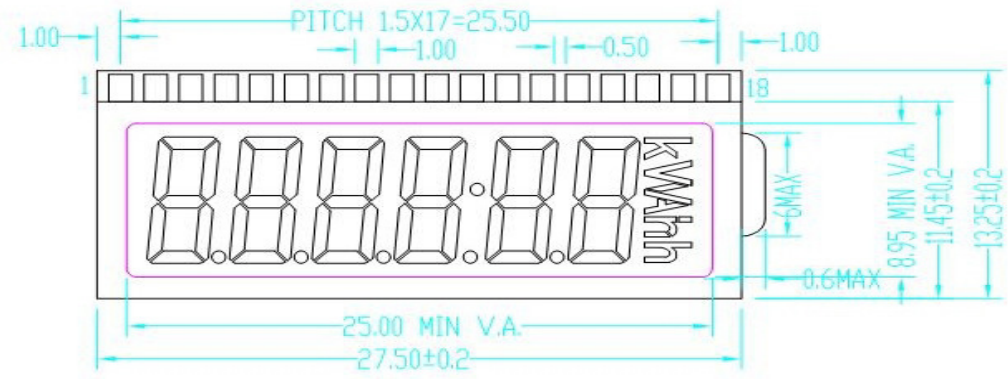


A	Impulse Indication LED
B	Turn Page Button (to read data)
C	RS485 Output
D	L-Out
E	L-In
F	Neutral Wire
G	LCD Display (with backlight)
H	LED Display

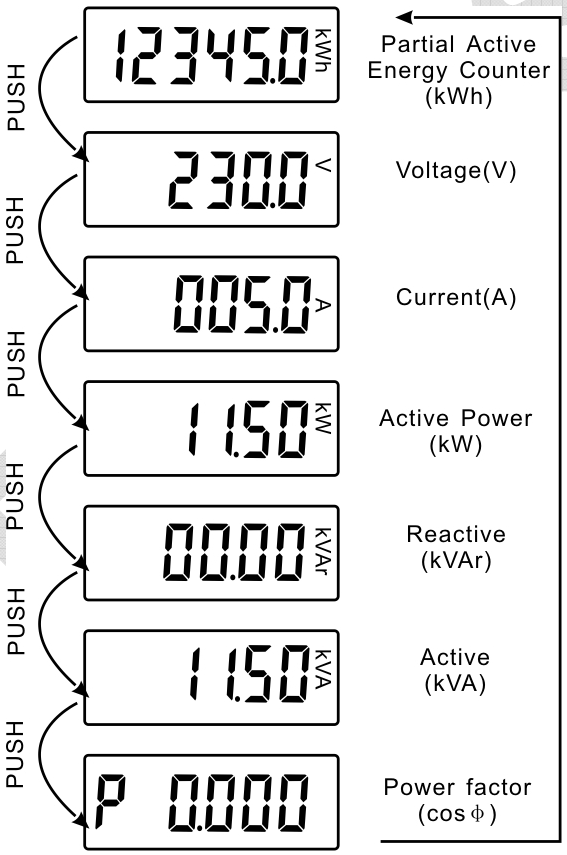
FORBIX SEMICON

4. Display

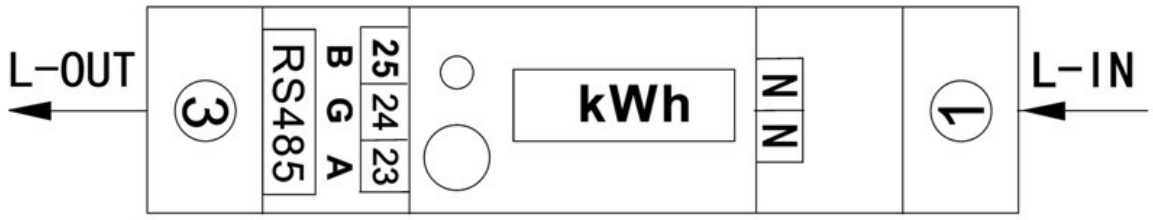
4.1 Dimensions of LCD Screen



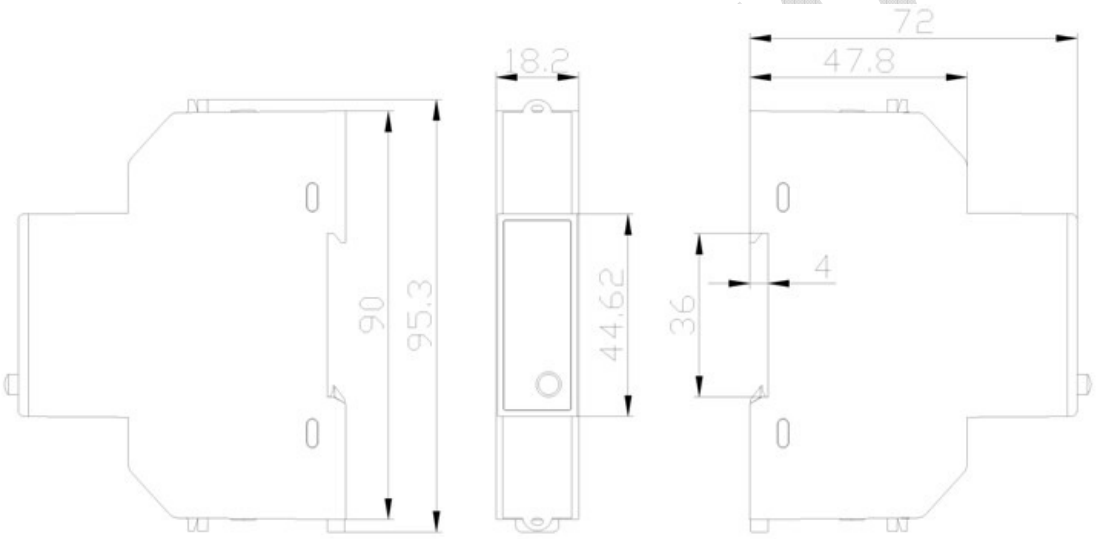
4.2 Parameters show on the LCD Screen



5. Connection diagram



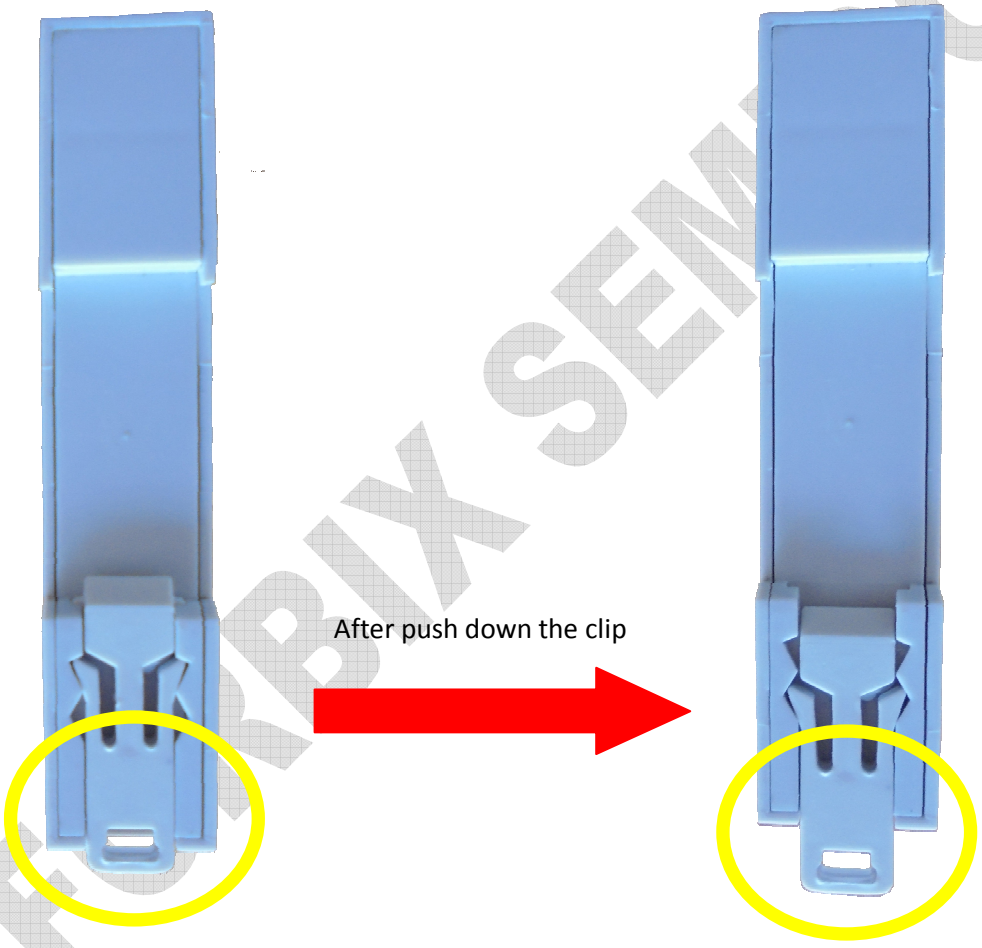
6. Meter dimensions



Height	95.3mm
Width	18.2mm
Depth	72mm
Weight	0.10Kg (Net)

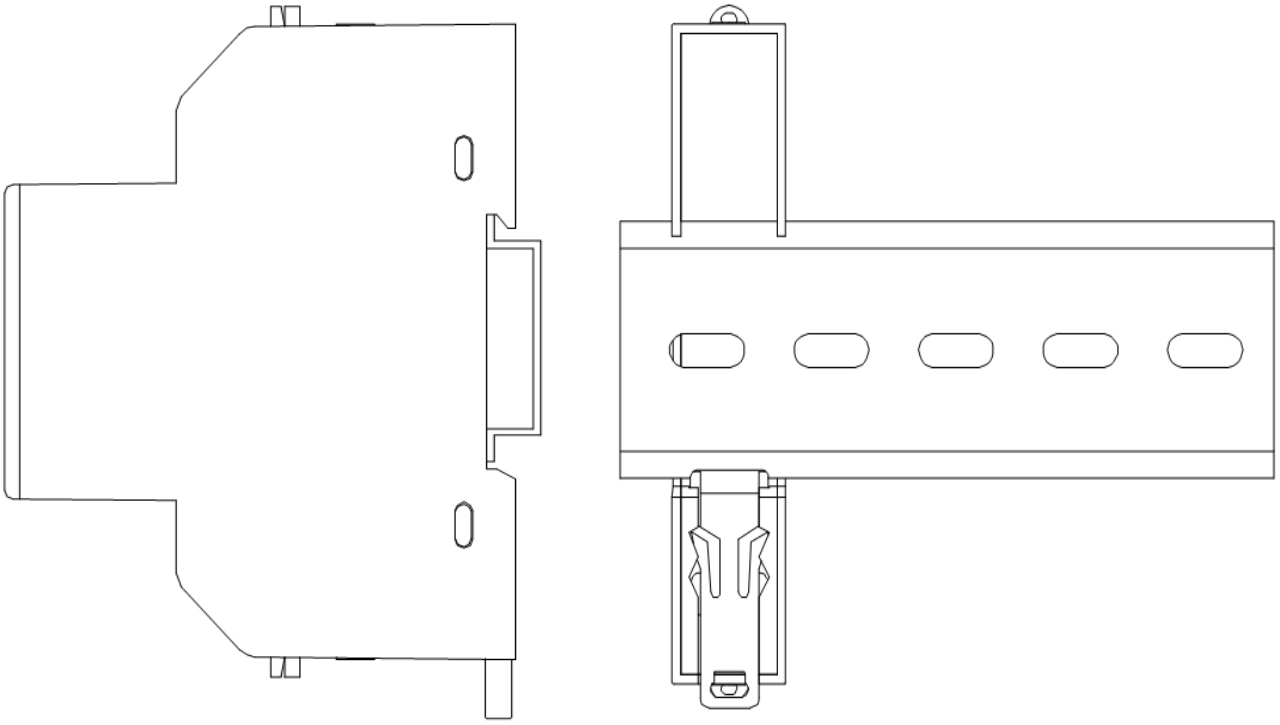
7. Installation Instruction

- Choose 35mm standard Din-Rail (the length is confirmed by yourself), fixed them in the location which are waiting for installation
- Push down the clip under the bottom of the meter for a gear.



FORBIX SEMICON

❖ Put the meter into the Din-rail , then push up the clip for a gear, install meter to the Din-rail



❖ After installation

❖ Making the connection according to the wiring diagram
❖ After connection, use lead sealing to seal terminal cover

Recommended wire (For your reference) :

Safe carrying capacity of rubber or plastic insulated wire(1)					
Specification (mm)	Nominal cross section (mm2)	Safe carrying capacity (A)			
		Copper core rubber insulated wire	Aluminum core rubber insulated wire	Copper core plastic insulated wire	Aluminum core plastic insulated wire
1*1.13	1	20		18	
1*1.37	1.5	25		22	
1*1.76	2.5	33	25	30	23
1*2.24	4	42	33	40	30
1*2.73	6	55	42	50	40
7*1.33	10	80	55	75	55
7*1.76	16	105	80	100	75
7*2.12	25	140	105	130	100
7*2.50	35	170	140	160	125
19*1.83	50	225	170	205	150
19*2.14	75	280	225	255	185
19*2.50	95	340	280	320	240
Note: Widely used in 500V AC and DC power distribution system. The temperature for the data listed in the above table is 35°c. The safe carrying capacity value for the wire on single coved					

FORBIX SEMICO

8. Safety Instructions

Information for Your Own Safety

This manual does not contain all of the safety measures for operation of this equipment (module or device) because special operating conditions, local code requirements or local regulations may necessitate further measures. However, it does contain information which must be adhered to for your own personal safety and to avoid damage to the equipment. This information is highlighted by a warning triangle with an exclamation mark or a lightning bolt depending on the severity of the warning.

After removing the packaging make sure the integrity of the unit. If in doubt don't use the equipment and contact technical staff. Mounting of electric appliances must be carried out only by skilled electricians. It is imperative to observe the generally applicable safety measures. In case of failure and /or malfunctioning of the device, turn off it. For any repair only contact technical staff. Failure to comply with the above may compromise the device safety.

Warning

Means that failure to observe the instruction can result in death, serious injury or considerable material damage.

Caution

Means hazard of electric shock and failure to take the necessary safety precautions will result in death, serious injury or considerable material damage.

Qualified personnel

Installation and operation of this equipment described in this manual may only be performed by qualified personal.

Only people that are authorized to install, connect and use this equipment and have the proper knowledge about labelling and grounding electrical equipment and circuits and can do so according to safety and regulatory standards are considered qualified personnel in the manual.

FORBIX SEMICON

Use for the intend purpose

The equipment (device, module) may only be used for the application cases specified in the Catalogue and the user manual and only in connection with devices and components recommended and approved by FORBIX SEMICON.

Exclusion of liability

We have checked the contents of this publication and every effort has been made to ensure that the descriptions are as accurate as possible. However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors or omissions in the information given. The data in this manual is checked regularly and the necessary corrections will be included in subsequent editions. If you have any suggestions, please let us know via email at: sales@forbixindia.com

9. Document History

Revision / Date	Approved	Description / Changes
May-2013	Yes	Initial Release

FORBIX SEMICON